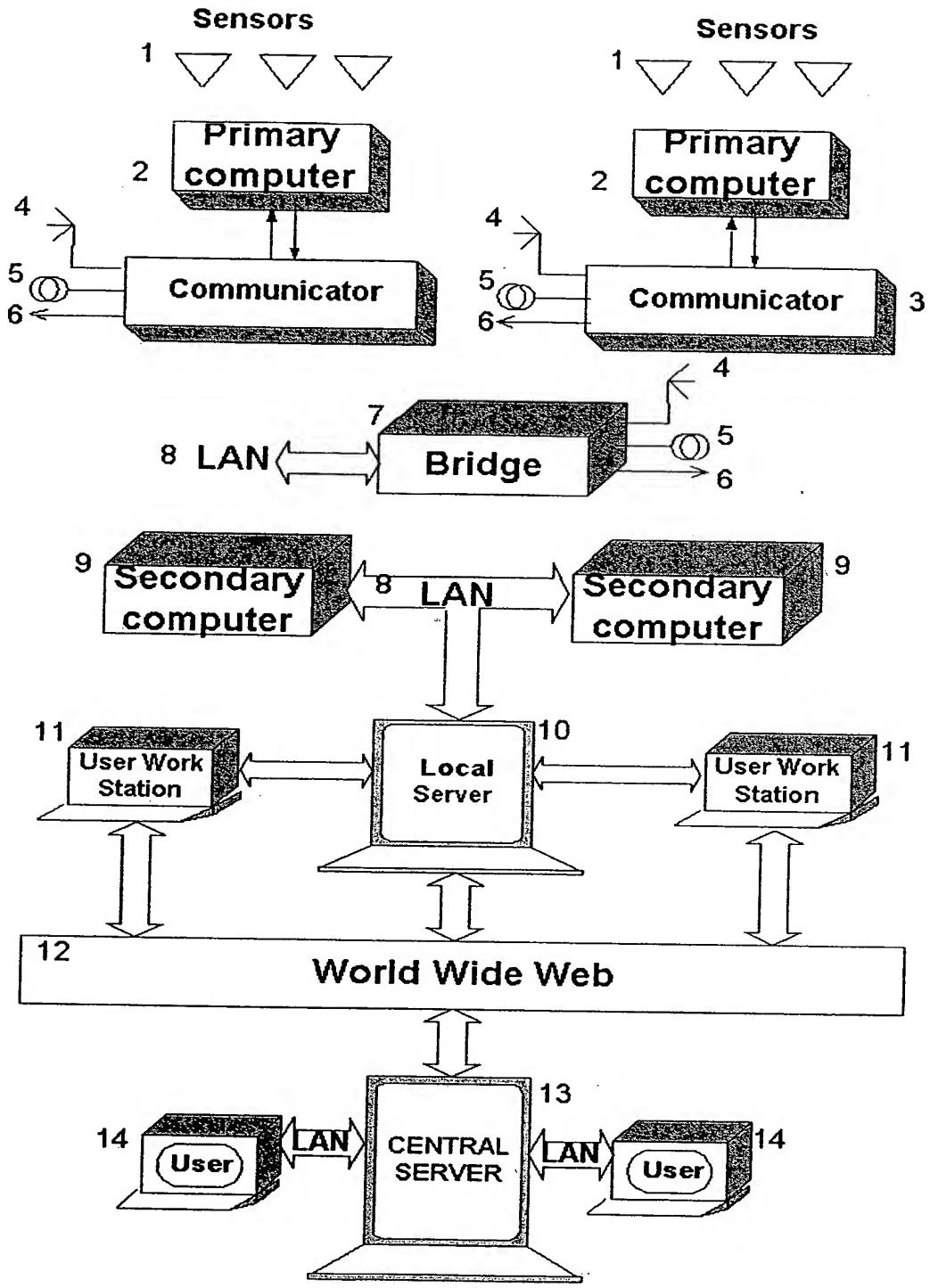


Figure 1a

Remote Diagnostics System Configuration, Version 1

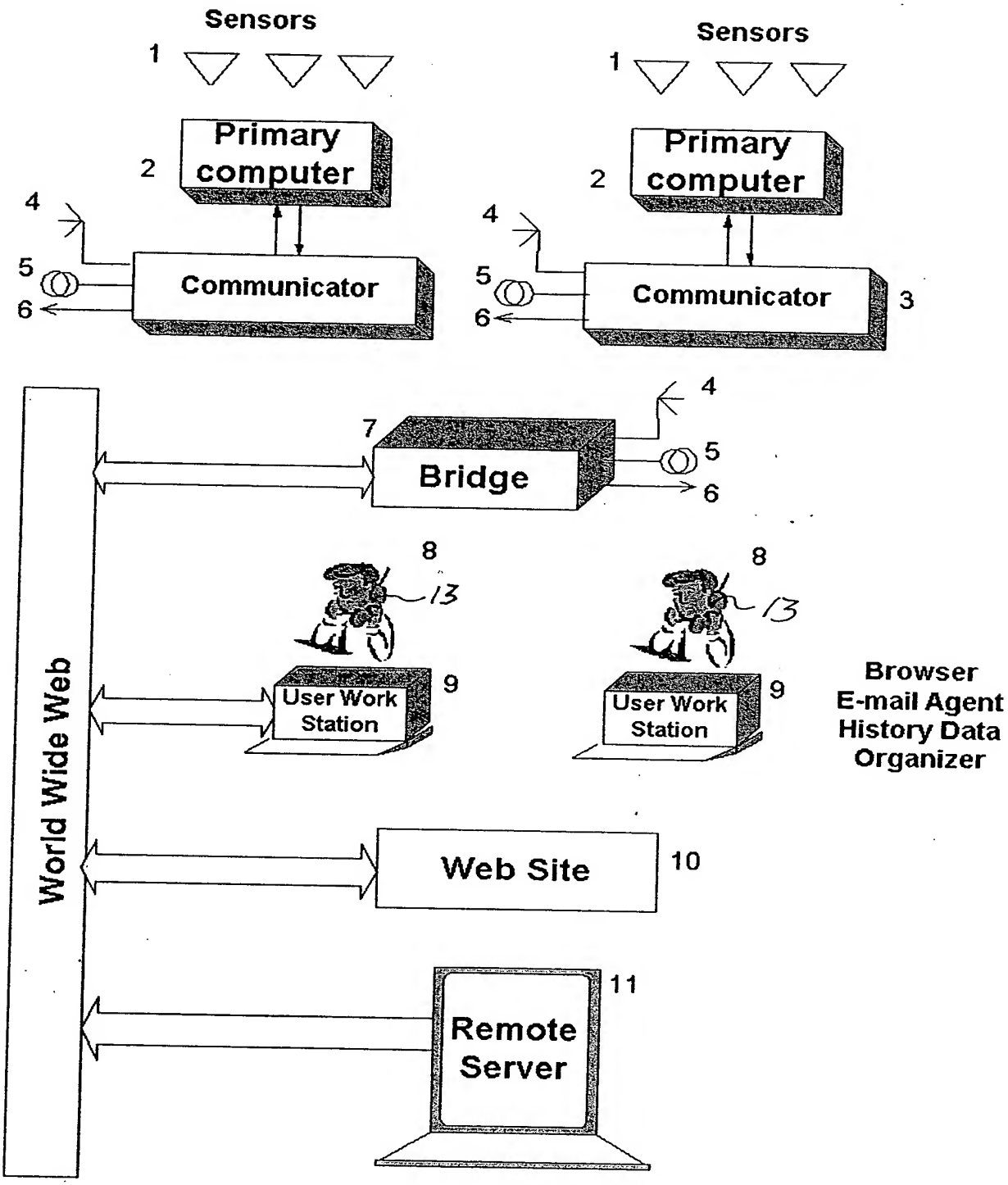


Figure 1b

Remote Diagnostics System Configuration, Version 2

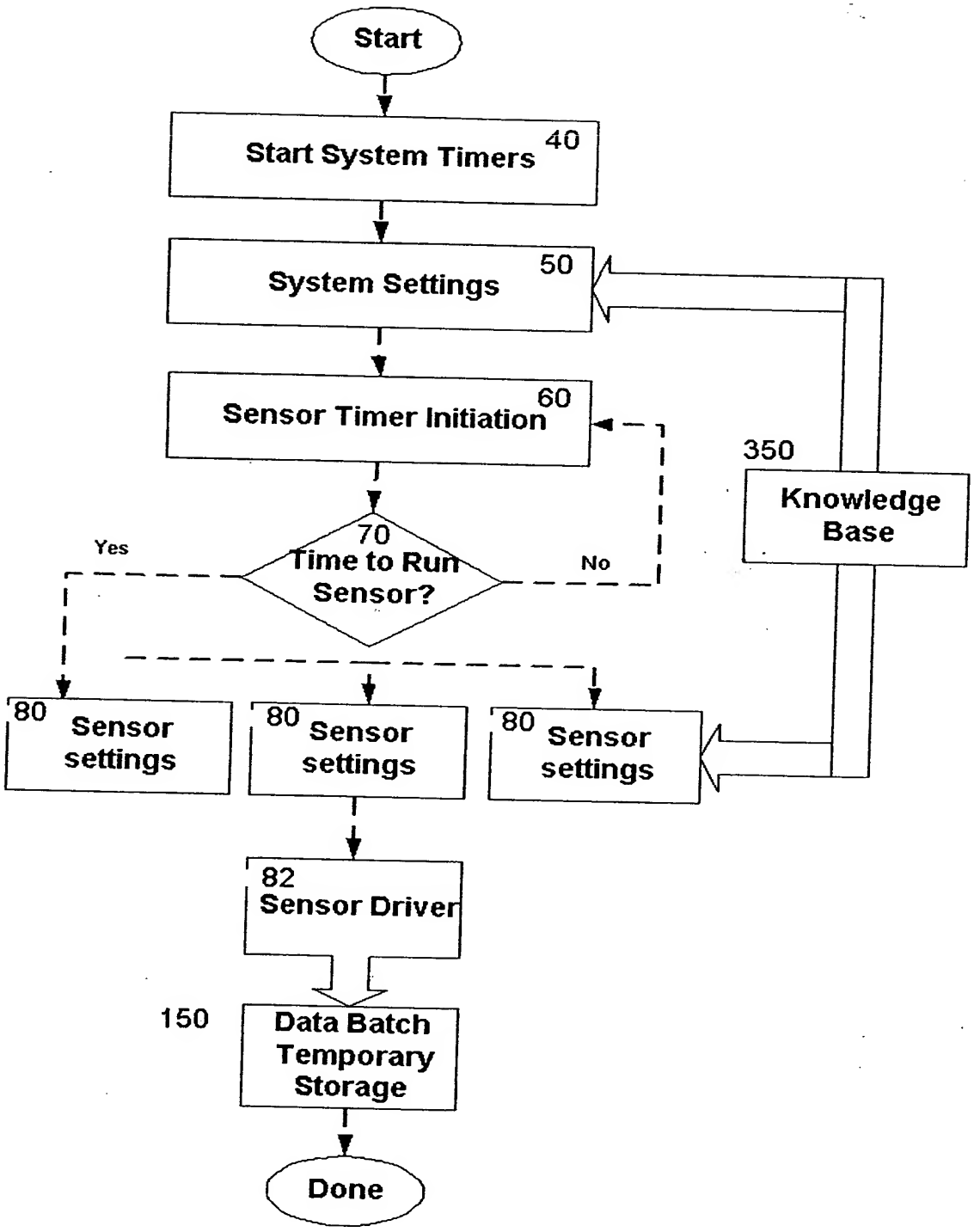
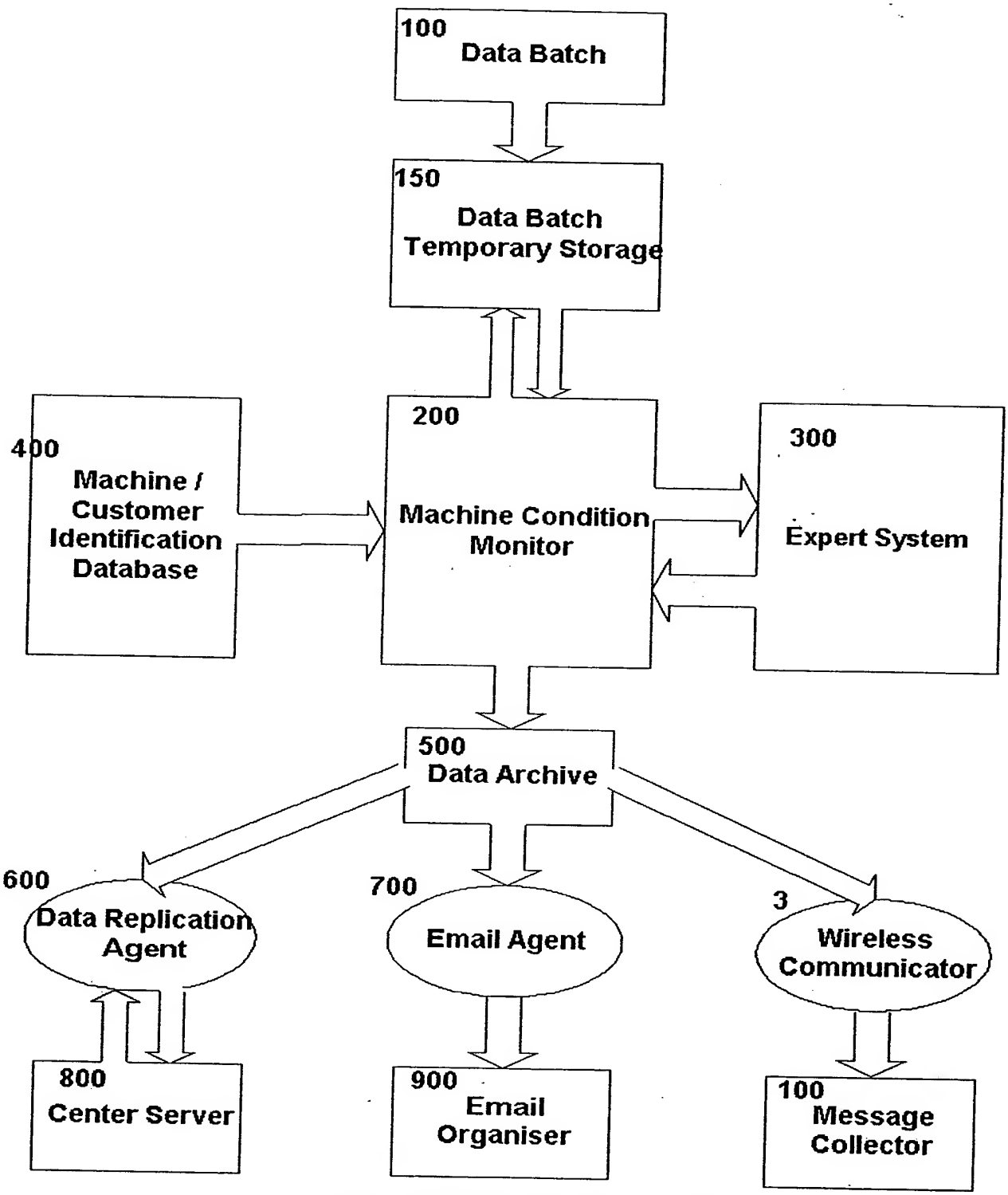


Figure 2 Data Acquisition Flow



Long Distance Diagnostics System Structure

Figure 3

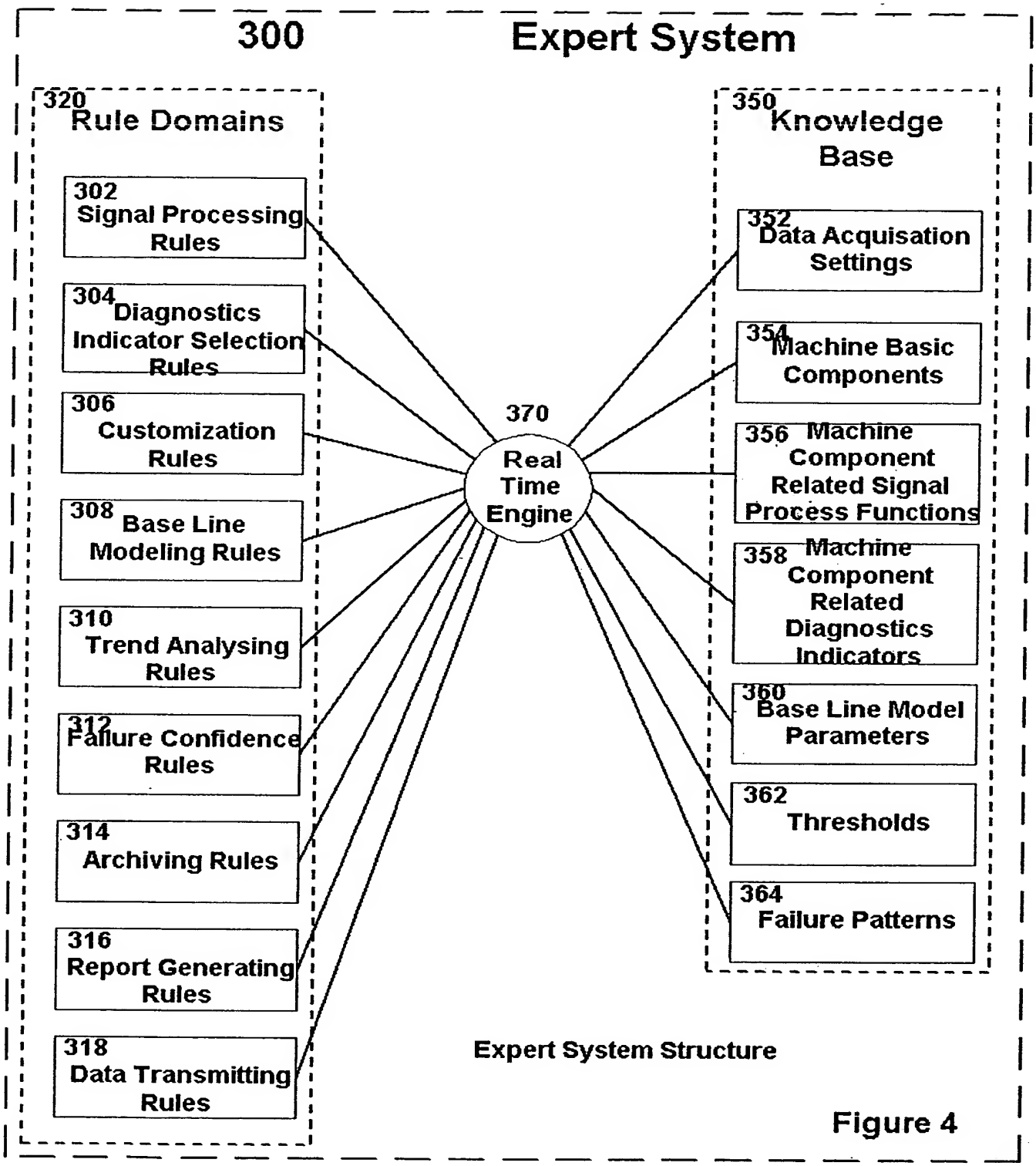
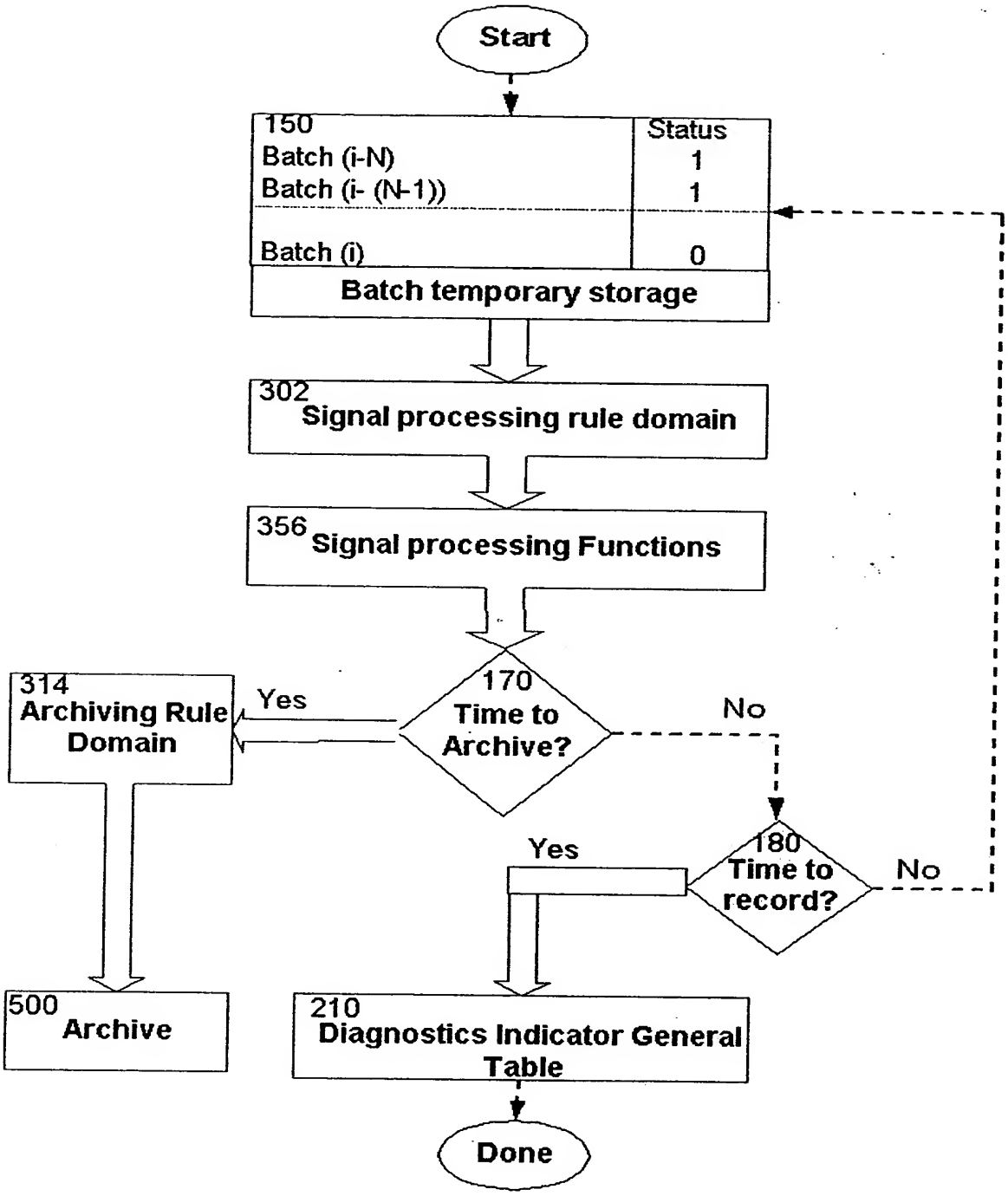

300
Expert System
320
Rule Domains
302
Signal Processing Rules
304
Diagnostics Indicator Selection Rules
306
Customization Rules
308
Base Line Modeling Rules
310
Trend Analysing Rules
312
Failure Confidence Rules
314
Archiving Rules
316
Report Generating Rules
318
Data Transmitting Rules
370
Real Time Engine
350
Knowledge Base
352
Data Acquisation Settings
354
Machine Basic Components
356
Machine Component Related Signal Process Functions
358
Machine Component Related Diagnostics Indicators
360
Base Line Model Parameters
362
Thresholds
364
Failure Patterns
Expert System Structure

Figure 4



Batch Processing Data Flow

Figure 5

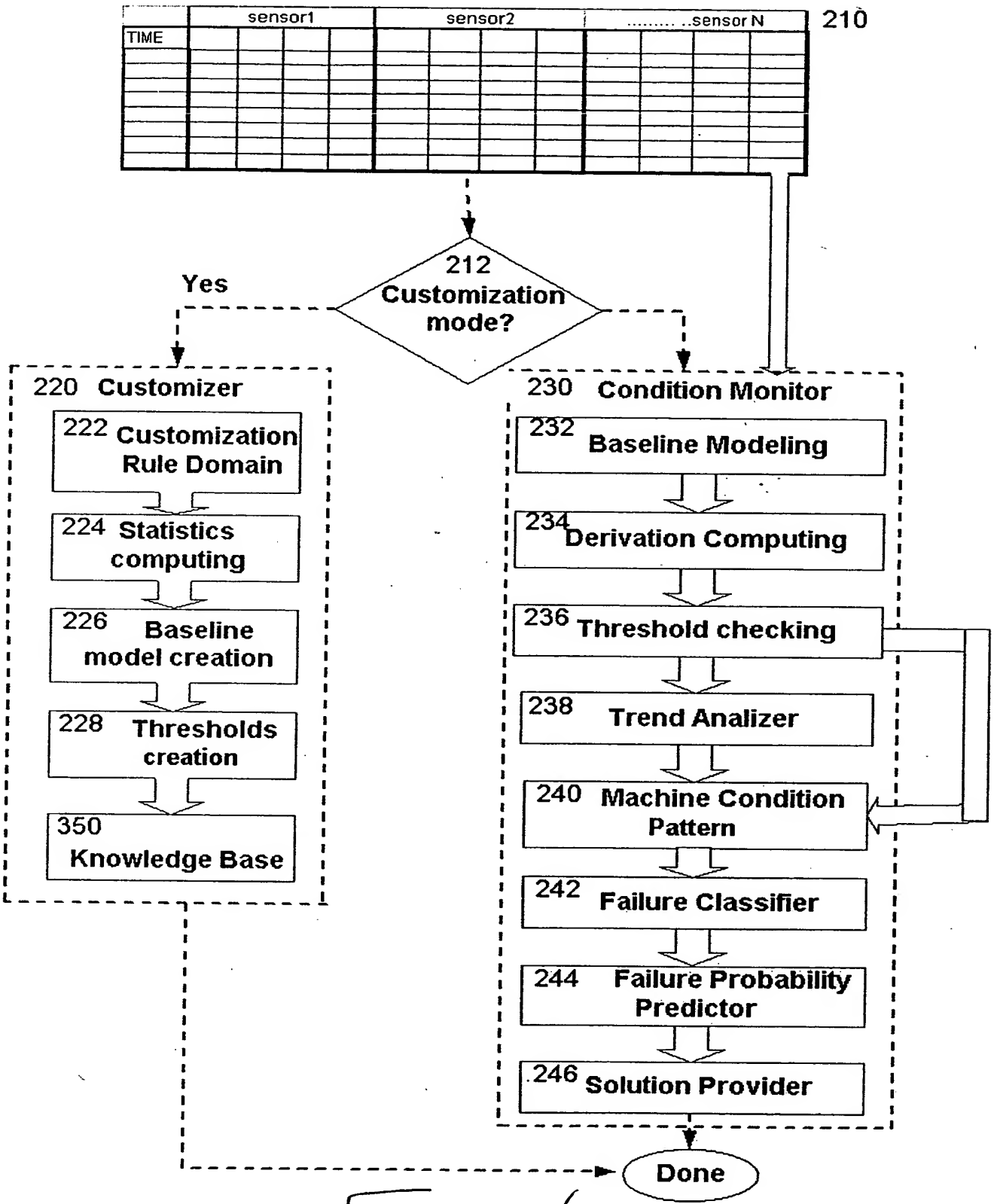
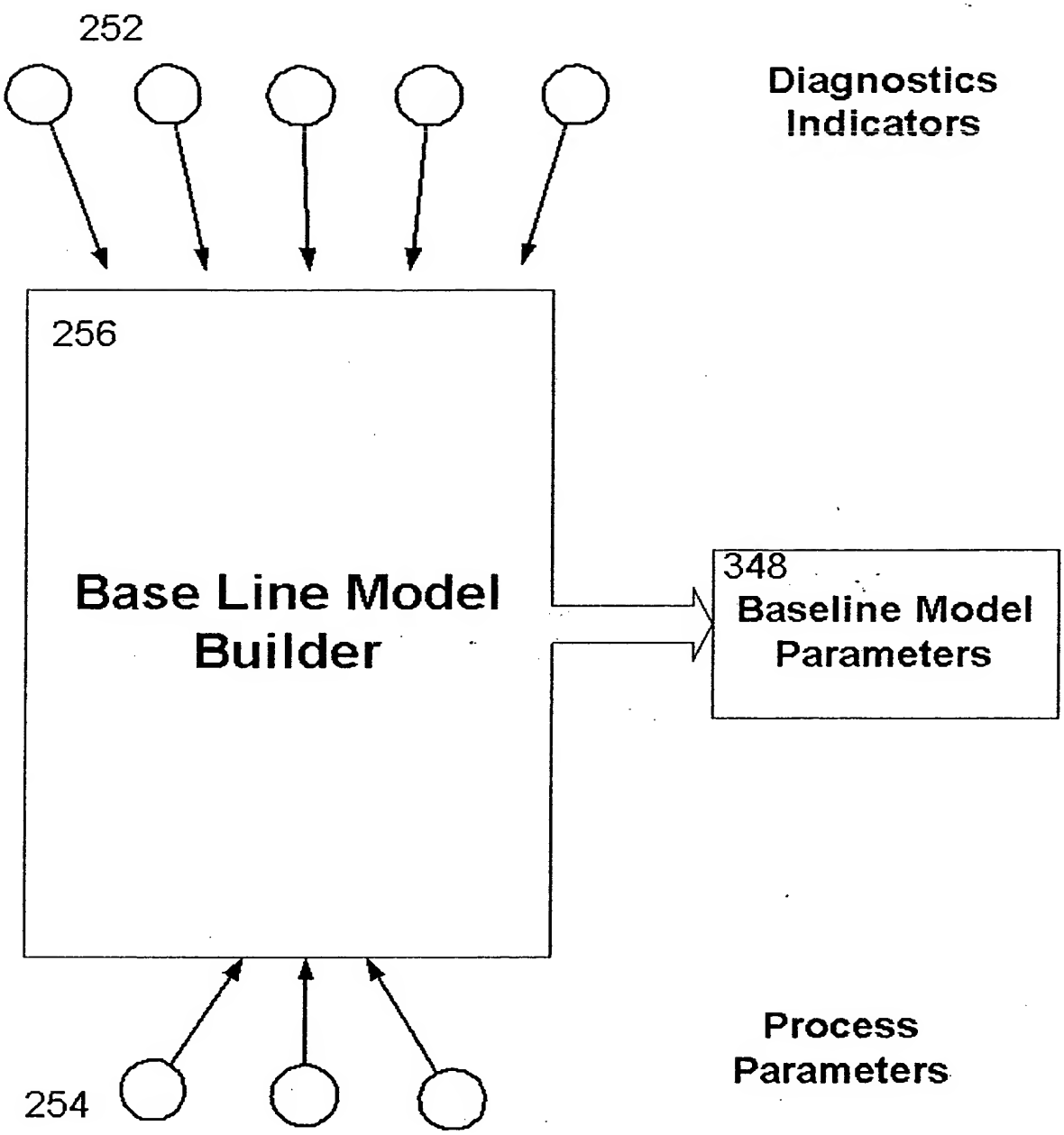
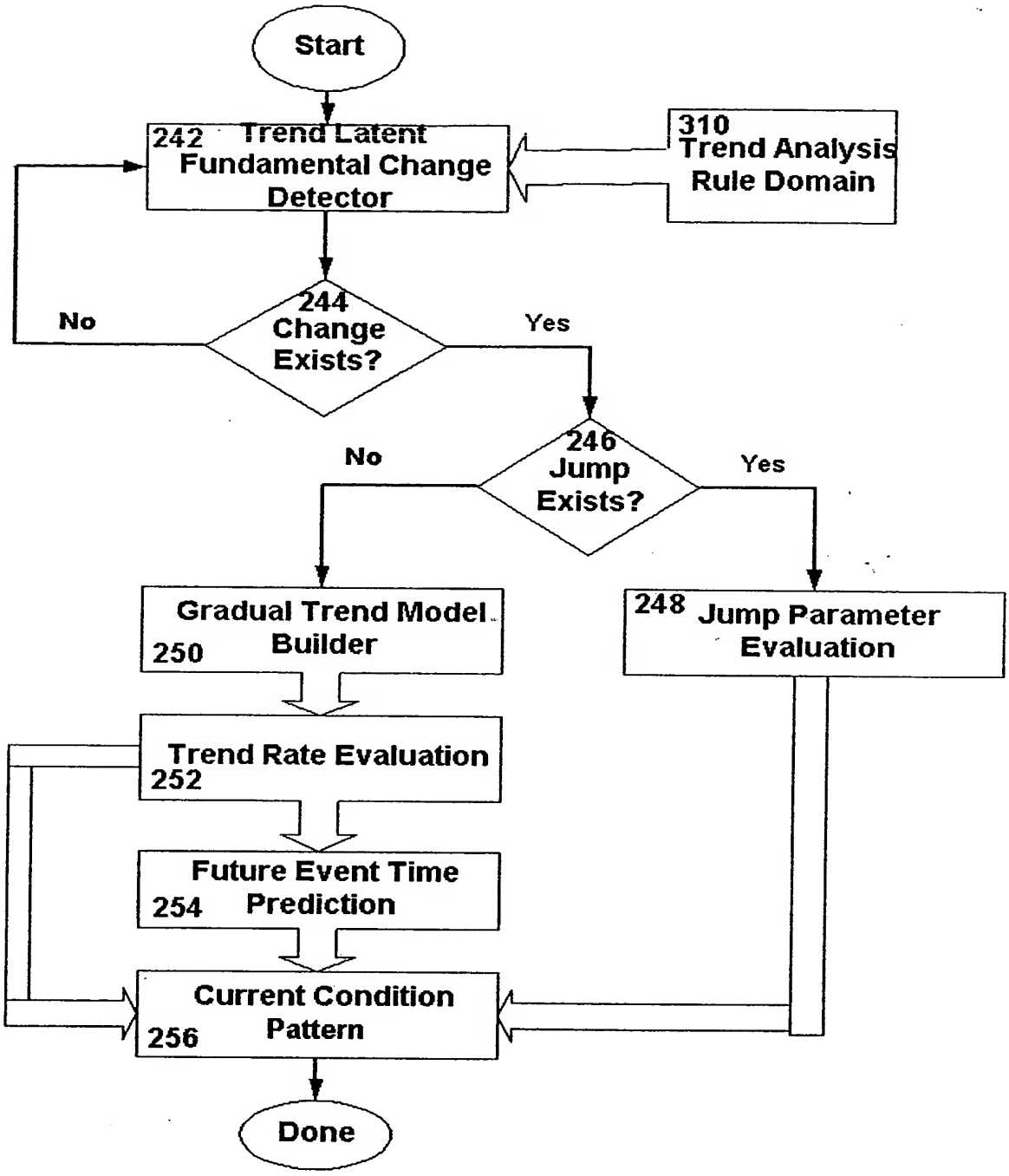

TIME
sensor1
sensor2
.....sensor N
210
212
Customization mode?
Yes
220 Customizer
222 Customization Rule Domain
224 Statistics computing
226 Baseline model creation
228 Thresholds creation
350 Knowledge Base
230 Condition Monitor
232 Baseline Modeling
234 Derivation Computing
236 Threshold checking
238 Trend Analizer
240 Machine Condition Pattern
242 Failure Classifier
244 Failure Probability Predictor
246 Solution Provider
Done

Figure 6



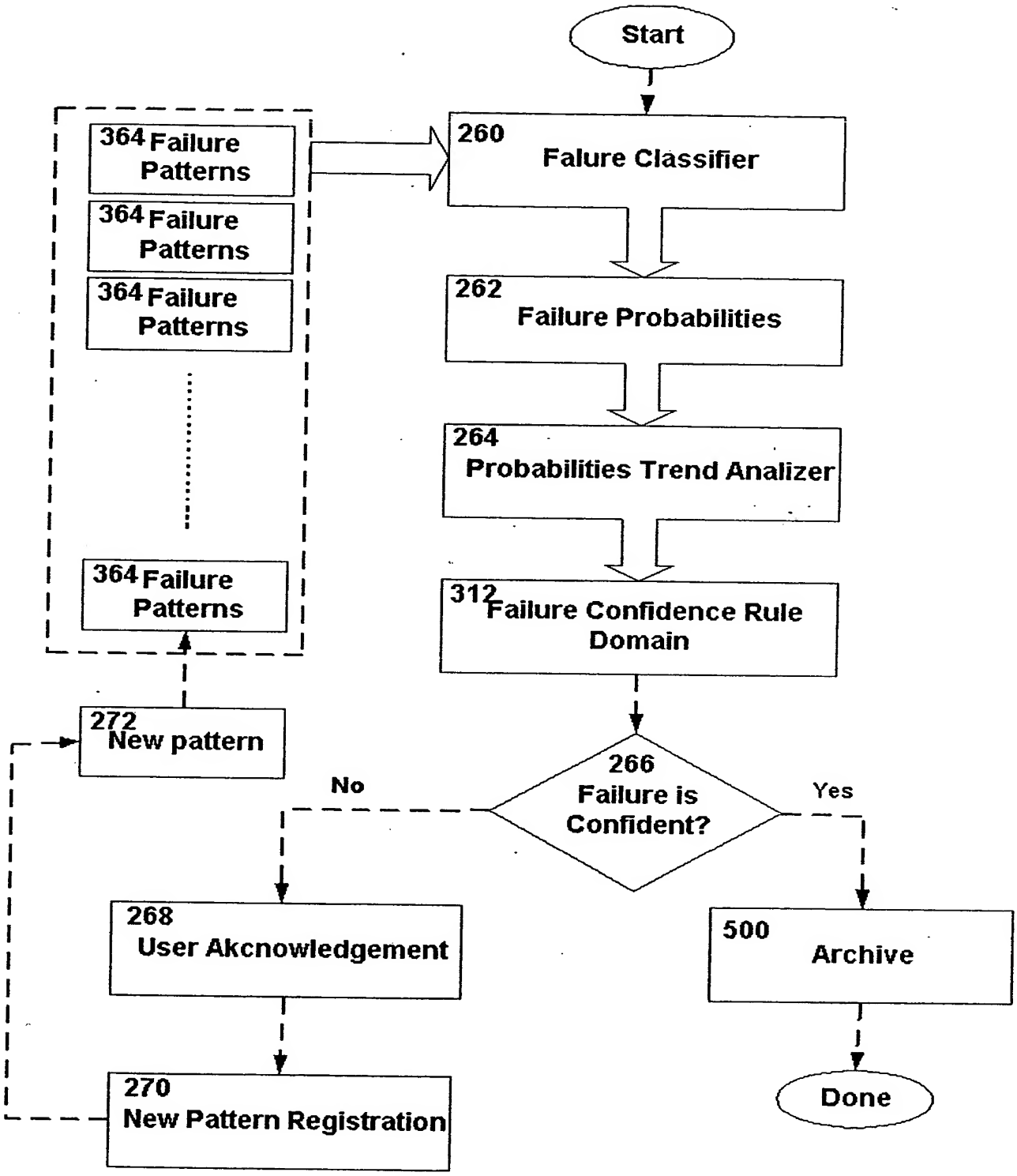
Baseline Model Creation

Figure 7



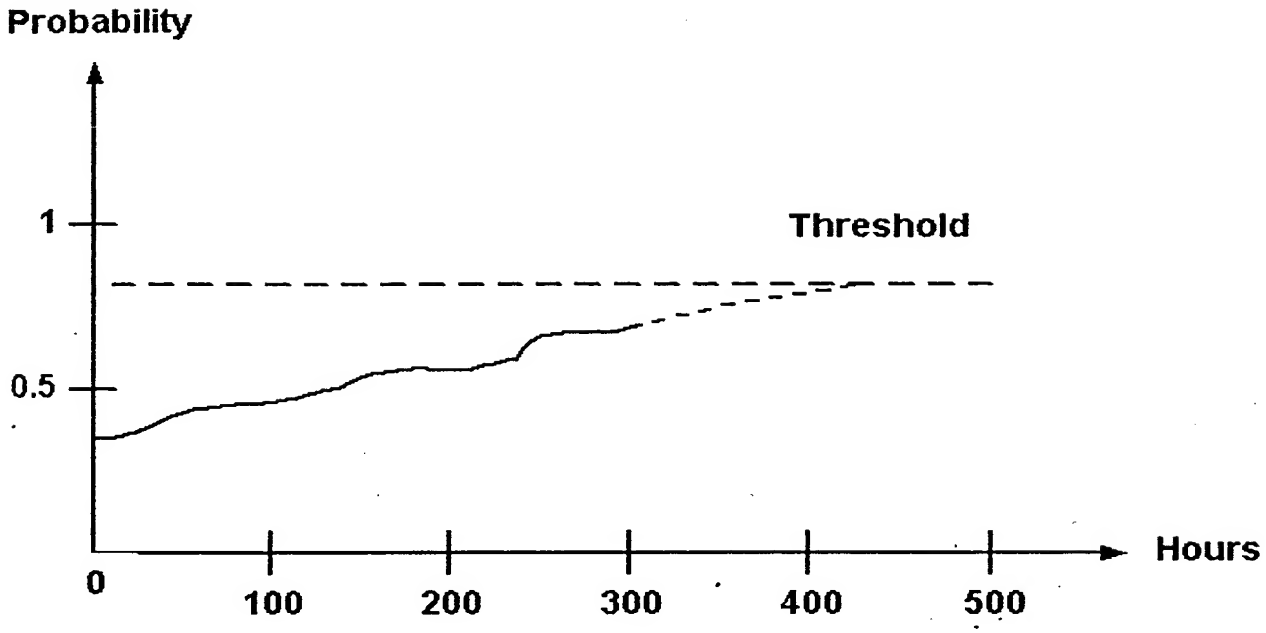
Trend Analysis Data Flow

Figure 8



Failure Classification Data Flow

Figure 9



Expected Failure Time Prediction

Figure 10